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VA demonstrates joined-wing technology

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WRIGHT-PATTERSON AIR FORCE BASE, Ohio — The Air Force Research Laboratory's Air Vehicles Directorate successfully completed the first flight test of a seven percent scale, joined-wing technology demonstrator.

During the test, a small UAV with joined-wings completed several takeoffs and landings that culminated with a two-minute run, in which the vehicle took off and then circled around to land in the spot where it took off. Engineers will use the flight test data to incrementally improve the scaled vehicle's design. The directorate envisions a new aeroelastically scaled research vehicle as a way to explore gust-load alleviation devices and consequently reduce structural weight.

The joined-wing provides a long-endurance, high-performance platform capable of supporting a next-generation sensor suite to perform Air Force Intelligence Surveillance and Reconnaissance (ISR) missions. The joined-wing vehicle configuration is a High-Altitude and Long Endurance concept that provides natural 360-degree radar coverage with conformal load-bearing radar systems imbedded in a multifunctional structural technology wing structure.

The joined-wing vehicle concept has two wings on the fuselage that sweep back to meet two forward-swept wings originating from the tail area. When viewed from above, the wings form a diamond shape. Joined-wings would be ideal for the SensorCraft concept. Their shape would allow a powerful, 360-degree radar to be incorporated into the SensorCraft's wings. Not only would this antenna placement free space on the vehicle's body for other equipment, it would also give the radar a virtually unobstructed "view" of the surrounding environment.

The directorate is developing the SensorCraft concept to investigate how emerging technology for sensors, communications links, air vehicle components, and propulsion systems could be incorporated to create the next generation ISR vehicle. SensorCraft will help engineers determine the viability of this vehicle. @